Amendments to the Specification

Please amend the paragraph beginning on line 6 of page 5 of the specification as follows:

In yet another embodiment, the invention provides a ~~a~~ pharmaceutical composition comprising a substantially homogenous cell population which co-express CD49c, CD90 and telomerase.

Please amend the paragraph beginning on line 19 of page 7 of the specification as follows:

"Co-express," as used herein, refers to the simultaneous detection of two or more molecules, *e.g.*, CD49c and CD90, on or in a single cell. Techniques to detect co-expression of CD49c and CD90 in cells (*e.g.*, bone marrow stromal cells) are well established. For example, co-expression of CD49c and CD90 on a cell can be detected by multiple color cytometric analysis. CD49c can be detected employing a fluorescein labeled probe and CD90 can be detected employing a Texas red probe. The CD49c and CD90 cell surface antigens can be visualized with the aid of a flow cytometer equipped with multiple filters capable of detecting the multiple colors. Techniques to detect the molecules of interest can also include ELISA, RIA, immunofluorescence ~~immunoflouresence~~ microscopy and quantitative PCR.

Please amend the paragraph beginning on line 3 of page 13 of the specification as follows:

In yet another embodiment, the substantially homogenous population of cells co-expressing CD49c and CD90 express a trophic factor selected from the group consisting of brain-derived neurotrophic factor (BDNF) (Barde, Y.A., *et al. EMBO J.,* 1(5):549-553 (1982)), nerve growth factor (NGF) (Levi-Montalcini, R., Arch Biol 76(2):387-417 (1965)), neurotrophin-3 (NT-3) (Mohn, A., *et al.*, *Nature* 344:339-341 (1990)), interleukin-6 (IL-6) (Barton, B.E., *Clin. Immumol. Immunopathol.* 85(1):16-20 (1997)),

interleukin-7 (IL-7), interleukin-11 (IL-11), stem cell factor (SCF), macrophage chemoattractant ~~chemoattractin~~ protein-1 (MCP-1), matrix metalloproteinase-9 (MMP-9) and Cystatin-C.

Please amend the paragraph beginning on line 1 of page 16 of the specification as follows:

The cells made by the method of the invention can also express at least one trophic factor (*e.g.*, BDNF, NGF, NT-3, IL-6, IL-7, IL-11, SCF, MCP-1, MMP-9 and Cystatin-C). In another embodiment, the substantially homogenous population of cells which co-express CD49c and CD90; co-express CD49c, CD90 and telomerase ~~teleromerase~~; co-express CD49c, CD90 but does not express bone salioprotein, made by the method of the invention do not express CD34 and/or CD45.

Please amend the paragraph beginning on line 3 of page 17 of the specification as follows:

In a further embodiment, the invention includes a method of treating a human suffering from a cardiac condition, comprising the step of administering to the human a substantially homogenous cell population which co-express CD49c and CD90. A cardiac condition is a disease of the heart. The disease of the heart can be a disease of the cardiac muscle, connective tissue of vessels of the heart. The cells used to treat the human suffering from a cardiac condition can also not express CD34 and/or CD45. A cardiac condition that can be treated by the cells of the invention can be, for example, myocardial infarction, myocarditis, vascular heart disease, cardiomyopathy, congenital heart disease, ~~eschemic~~ ischemic heart disease, heart transplant and pre-transplantation bridge.

Please amend the paragraph beginning on line 12 of page 17 of the specification as follows:

An additional embodiment of the invention includes a method of treating a human suffering from a neurological condition, comprising the step of administering to the

human a substantially homogenous cell population which co-express CD49c and CD90; co-express CD49c, CD90 and telomerase; CD49c, CD90 and a bone lineage marker. "A neurological condition," as used herein, refers to any state of the nervous system (central or peripheral nervous system) which deviates in any manner from a normal nervous system or nervous system of a mammal (*e.g.*, human) not affected by a neurological condition. The neurological condition can be a condition of the central (brain or spinal cord) or peripheral nervous system. The neurological condition can be, for example, the result or consequence of a disease (*e.g.*, amyotrophic lateral sclerosis, Parkinson's Disease, Fabry Disease), acute injury condition (*e.g.*, stroke, brain injury, spinal cord injury) or a combination of disease and acute injury condition. Other neurological conditions which can be treated with the substantially homogenous population of cells of the invention which co-express CD49c and CD90 include, for example, metachromatic ~~distropy~~ dystrophy, adrenal leukodystrophy, Canavan disease, Pelizaeus Merzbacher disease, ~~Nieman-pick~~ Nieman-Pick disease and a brain tumor.

Please amend the paragraph beginning on line 1 of page 19 of the specification as follows:

In another embodiment, the invention is a method of treating a human suffering from a neurological condition (*e.g.*, spinal cord injury, an amyotrophic lateral sclerosis, a Parkinson's Disease, a stroke, a traumatic brain injury, a Fabry Disease condition, metachromatic ~~distropy~~ dystrophy, adrenal leukodystrophy, Canavan disease, Pelizaeus Merzbacher disease, ~~Nieman-pick~~ Nieman-Pick disease, a brain tumor) by culturing a source of a cell population at a seeding density of less than about 100 cells/cm^2 under a low oxygen condition; selecting from the cultured source of the cell population, a population of cells which co-express CD49c and CD90; and administering the population of cells which co-express CD49c and CD90 to the human.

Please amend the paragraph beginning on line 18 of page 19 of the specification as follows:

The cell populations of the invention may have the capacity to respond to intrinsic signals (*e.g.*, at the sites of transplantation or when incorporated into tissues and organs) and exogenous cues to differentiate into numerous cell types (*e.g.*, neuronal, glial, astrocytes, ~~oligodendrocystes~~ oligodendrocytes) in the human. The cell populations of the invention can provide a readily available source of cells for use in treating humans. The cell populations of the invention can be readily isolated from adult or embryonic tissues, proliferate at high rates, have large expansion potential, can be stable for long periods of time, can be responsive to exogenous signals and can produce sufficient therapeutic quantities of molecules of interest.

Please amend the paragraph beginning on line 7 of page 20 of the specification as follows:

"Committed progenitor cell," as used herein, refers to a precursor cell obtained from a source (*e.g.*, human bone marrow, fat, cord blood, skin) which develops into a cell for a particular purpose. A committed progenitor cell can be, for example, a CD49c/CD90 ~~cellderived~~ cell derived from human bone marrow which can differentiate or develop into, for example, a neuron, glial, astrocyte or oligodendrocyte cell.

Please amend the paragraph beginning on line 12 of page 20 of the specification as follows:

In another embodiment, the invention is a method of treating a human suffering from a neurological condition by culturing a source of a cell population (*e.g.*, bone marrow aspirates) and selecting (*e.g.*, by a low oxygen culture condition) from the cultured source of the cell population, cells which co-express CD49c and CD90; co-express CD49c, CD90 and telomerase; or co-express CD49c, CD90 and a bone lineage marker. The selected cells which co-express, for example, CD49c and CD90 are modified to become a committed progenitor cell and administered to a human with a neurological condition (*e.g.*, a spinal cord injury, an amyotrophic lateral sclerosis, a Parkinson's

Disease, a stroke, a traumatic brain injury, a Fabry Disease condition, metachromatic ~~distropy~~ dystrophy, adrenal leukodystrophy, Canavan disease, Pelizaeus Merzbacher disease, ~~Nieman-pick~~ Nieman-Pick disease and a brain tumor).

Please amend the paragraph beginning on line 6 of page 23 of the specification as follows:

The cells of the invention can be placed or transplanted in cavities or spaces of the central or peripheral nervous system. For example, the cells of the invention can be placed in the ventricles of the brain, ~~subaracheid~~ subarachnoid space of the spinal cord, or vertebral canal of the spinal cord. One skilled in the art would be able to determine the manner (*e.g.*, needle injection or placement, more invasive surgery) most suitable for placement of the cells depending upon the location of the neurological condition and the medical condition of the patient.

Please amend the paragraph beginning on line 11 of page 24 of the specification as follows:

The substantially homogenous population of cells which co-express CD49c and CD90 can be used alone or in any combination when administered to a human suffering from a neurological condition. For example, steroids or pharmaceutical synthetic drugs can be ~~co-adminstration~~ co-administration with the cells of the invention. Likewise, treatment of spinal cord injury can include the administration/transplantation of the cells of the invention in a human whose spine has been physically stabilized.

Please amend the paragraph beginning on line 18 of page 26 of the specification as follows:

Resuspended cells (approximately 10^6) were aliquoted into12x75 mm Flow Cytometry tubes and repelleted at 500 x g for 5 minutes. The HBSS was removed and 25 mL of the following antibodies (all obtained from Becton Dickenson), alone or in combination, were placed into each tube: mouse IgG1k-FITC or -PE (clone MOPC-21)

CD49c-PE (cl. C3II.1), CD90-FITC (cl. 5E10), CD45-FITC or -PE (cl. HI30). Tubes were gently vortexed and incubated for 30 minutes at 4°C. Cells were then washed in HBSS/1% bovine serum albumin, centrifuged (30 min, 4°C) and the resulting cellular pellet fixed by the addition of 250 microliters of 2% ~~paraformaldhyde~~ paraformaldehyde/HBSS. Flow cytometric analysis was performed employing a Becton-Dickenson FACSVantage SE cytometer and analyzed using CELLQUEST® software. Figure 1 depicts results representing data collected from 2,500- 10,000 events per panel. After compensation for non-specific antibody staining using mouse IgG1 isotype controls, cellular expression of CD45, CD49c and CD90 in the cultured bone marrow cells was assessed. The adherent population derived from mononuclear cells initially purified using ammonium chloride lysis contained approximately 70% CD49c positive cells at a similar stage of culture (Figure 1A). The majority of cells that did not express CD49c were positive for expression of ~~hematopoetic~~ hematopoietic/myeloid lineage marker CD45 (Figure 1A, LR quadrant), demonstrating that the CD49c positive cell population derived from human bone marrow isolated was not directly related to known hematopoietic precursors. More than 94% of the adherent population was CD90 and CD49c positive (Figure 1B).

Please amend the paragraph beginning on line 27 of page 27 of the specification as follows:

Cytometry analysis of the CFU generated showed that approximately 50% of the adherent population expressed the marker CD49c at 7 days in vitro (Figure 2A, sum of UL and UR quadrants). The majority of cells that did not express CD49c were positive for expression of ~~hematopoetic~~ hematopoietic/myeloid lineage marker CD45 (Figure 2A, LR quadrant), demonstrating that the CD49c positive cell population derived from human bone marrow isolated by this procedure was not directly related to known hematopoietic precursors. More than 91% of the adherent population was CD90 and CD49c positive (Figure 2B).

Please amend the paragraph beginning on line 23 of page 30 of the specification as follows:

Cycle threshold values were converted into relative transcript number using a standard curve then normalized using the corresponding 18s. Data are expressed as a ratio of transcript per 10^6 18s transcripts. The name, ~~Genebank~~ Genbank ID, bp location and sequence of the qPCR primers are as follows:

Please amend the paragraph beginning on line 3 of page 33 of the specification as follows:

An aliquot of the Master Cell Bank generated in Example 1 was thawed and plated onto T75 flasks at 2500 cells/cm^2 with complete medium and incubated at 5%O_2. The following day the medium was removed and replaced with fresh complete medium. The supernatant was collected 8 hours later from T75 and the cells were counted (Cell count = 280,000 cells). The supernatant was aliquoted to 1 ml tubes and stored at -20°C. Another T75 was processed the same way 3 days later (Cell count = 2.43 million). Supernatants were later thawed at room temperature and assayed by ELISA for secretion of the following ~~neurotrophicfactors~~ neurotrophic factors /cytokines using commercially available kits: BDNF (Chemicon), NGF (Chemicon), MCP-1 (R and D Systems), and IL-6 (R and D Systems). Multiple dilutions were performed on supernatant to ensure that measured values fell within standard ranges of the assay. In addition, media obtained from control cells secreting previously determined amounts of cytokine were run in parallel to assure assay validity. Values were obtained by normalizing raw data derived from ELISA to standard time (24 hours) and cell number (1 million) and are thus expressed as "picograms of cytokine secreted per 1 million cells per 24 hour period as follows:

Please amend the paragraph beginning on line 27 of page 35 of the specification as follows:

The name, ~~Genebank~~ Genbank ID, bp location and sequence of the qPCR primers are as follows: